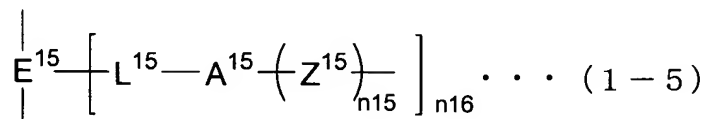
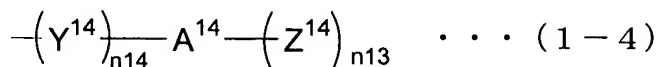


AMENDMENT

LISTING OF CLAIMS:

The following listing supplants all prior listings of the claims.

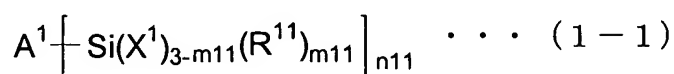
1. (Canceled) An organic-inorganic hybrid material produced by crosslinking a precursor that is an organosilicon compound having a mesogen group.
2. (Withdrawn) The organic-inorganic hybrid material of claim 1, which is produced by three-dimensionally crosslinking the precursor.
3. (Withdrawn) The organic-inorganic hybrid material of claim 1, further comprising at least one compound of the following formulae (1-4) and (1-5), wherein the amount of the at least one compound is in range of from 1 mol% to 50 mol% relative to the precursor:



wherein, in formulae (1-4) and (1-5), A¹⁴ and A¹⁵ each represent an organic atomic group that contains a mesogen and an alkylene group having at least 4 carbon atoms; Z¹⁴ and Z¹⁵ each represent a substituent not changing in sol-gel reaction, or a hydrogen atom; n13 and n15 each indicate an integer of from 1 to 8; n14 indicates an integer of from 0 to 4; n16 indicate an integer of from 1 to 5; Y¹⁴ represents a polymerizing group that may form a carbon-carbon bond or a carbon-oxygen bond through polymerization; L¹⁵ represents a linking group; E¹⁵ represents an alkyleneoxy group, an alkylene group

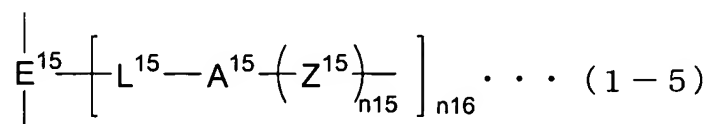
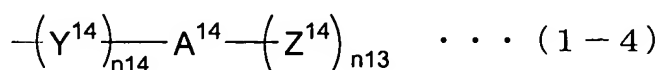
or a siloxy group; when n13 or n15 is 2 or more, then Z¹⁴'s or Z¹⁵'s may be the same or different.

4. (Canceled) The organic-inorganic hybrid material of claim 1, which is produced by polymerizing a compound of the following formula (1-1):



wherein A¹ represents an organic atomic group that contains a mesogen group and an alkylene group having at least 4 carbon atoms; R¹¹ represents an alkyl group, an aryl group or a heterocyclic group; X¹ represents a halogen atom or OR¹⁴; R¹⁴ represents a hydrogen atom, an alkyl group, an aryl group or a silyl group; m11 indicates an integer of from 0 to 2; n11 indicates an integer of from 1 to 10; when m11 or 3-m11 is 2 or more, then R¹¹'s or X¹'s may be the same or different.

5. (Withdrawn) The organic-inorganic hybrid material of claim 4, further comprising at least one compound of the following formulae (1-4) and (1-5), wherein the amount of the at least one compound is in range of from 1 mol% to 50 mol% relative to the precursor:

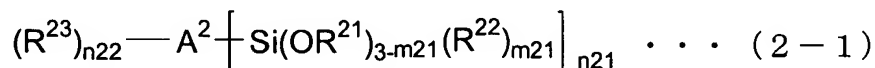


wherein in formulae (1-4) and (1-5), A¹⁴ and A¹⁵ each represent an organic atomic group that contains a mesogen and an alkylene group having at least 4 carbon atoms; Z¹⁴ and Z¹⁵ each represent a substituent not changing in sol-gel reaction, or a hydrogen atom; n13 and n15 each indicate an integer of from 1 to 8; n14 indicates an integer of

from 0 to 4; n₁₆ indicate an integer of from 1 to 5; Y¹⁴ represents a polymerizing group that may form a carbon-carbon bond or a carbon-oxygen bond through polymerization; L¹⁵ represents a linking group; E¹⁵ represents an alkyleneoxy group, an alkylene group or a siloxy group; when n₁₃ or n₁₅ is 2 or more, then Z¹⁴'s or Z¹⁵'s may be the same or different.

6. (Withdrawn) The organic-inorganic hybrid material of claim 1, which is produced by three-dimensionally crosslinking a precursor that is an organosilicon compound that has an alkoxysilyl group, a mesogen group and a substituent group capable of forming a carbon-carbon bond or a carbon-oxygen bond through polymerization.

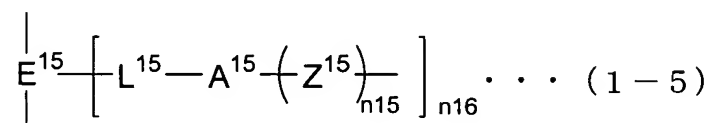
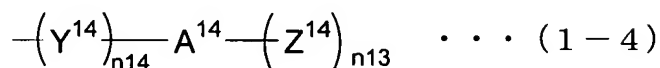
7. (Withdrawn) The organic-inorganic hybrid material of claim 6, which is produced through sol-gel reaction of a precursor that is an organosilicon compound of the following formula (2-1) to form an Si-O-Si bond, combined with polymerization of the substituent in the organosilicon compound to form a carbon-carbon bond or a carbon-oxygen bond:



wherein A² represents an organic atomic group containing a mesogen group; R²¹ represents an alkyl group; R²² represents an alkyl group, an aryl group or a heterocyclic group; R²³ represents a substituent group capable of forming a carbon-carbon bond or a carbon-oxygen bond through polymerization; m₂₁ indicates an integer of from 0 to 2; n₂₁ indicates an integer of from 1 to 10; n₂₂ indicates an integer of from 1 to 5; when 3-m₂₁ or m₂₁ is 2 or more, then R²¹'s or R²²'s may be the same or different; when n₂₂ is 2 or more, then R²³'s may be the same or different.

8. (Withdrawn) The organic-inorganic hybrid material of claim 7, further comprising at least one compound of the following formulae (1-4) and (1-5), wherein the amount of

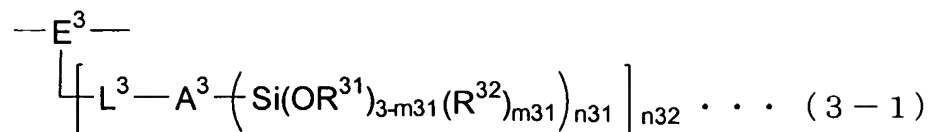
the at least one compound is in range of from 1 mol% to 50 mol% relative to the precursor:



wherein, in formulae (1-4) and (1-5), A^{14} and A^{15} each represent an organic atomic group that contains a mesogen and an alkylene group having at least 4 carbon atoms; Z^{14} and Z^{15} each represent a substituent not changing in sol-gel reaction, or a hydrogen atom; $n13$ and $n15$ each indicate an integer of from 1 to 8; $n14$ indicates an integer of from 0 to 4; $n16$ indicate an integer of from 1 to 5; Y^{14} represents a polymerizing group that may form a carbon-carbon bond or a carbon-oxygen bond through polymerization; L^{15} represents a linking group; E^{15} represents an alkyleneoxy group, an alkylene group or a siloxy group; when $n13$ or $n15$ is 2 or more, then Z^{14} 's or Z^{15} 's may be the same or different.

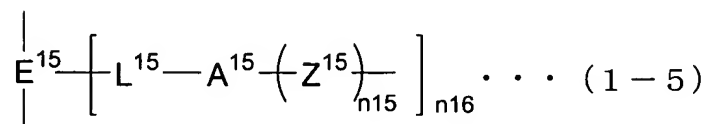
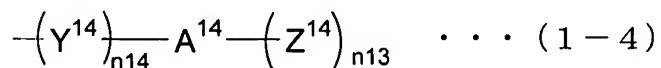
9. (Withdrawn)The organic-inorganic hybrid material of claim 1, which is produced through crosslinking polymerization of a precursor that is a polymer having, in the side branches thereof, an atomic group that contains an alkoxysilyl group, a mesogen group and an alkylene group.

10. (Withdrawn)The organic-inorganic hybrid material of claim 9, in which the precursor is a polymer having a repeating unit of the following formula (3-1):



wherein A³ represents an organic atomic group that contains a mesogen group and an alkylene group; R³¹ represents an alkyl group; R³² represents an alkyl group, an aryl group or a heterocyclic group; E³ represents an alkyleneoxy group, an alkylene group or a siloxy group; L³ represents a linking group; m31 indicates an integer of from 0 to 2; n31 indicates an integer of from 1 to 10; n32 indicates an integer of from 1 to 5; when 3-m31 or m31 is 2 or more, then R³¹'s or R³²'s may be the same or different.

11. (Withdrawn)The organic-inorganic hybrid material of claim 10, further comprising at least one compound of the following formulae (1-4) and (1-5), wherein the amount of the at least one compound is in range of from 1 mol% to 50 mol% relative to the precursor:



wherein, in formulae (1-4) and (1-5), A¹⁴ and A¹⁵ each represent an organic atomic group that contains a mesogen and an alkylene group having at least 4 carbon atoms; Z¹⁴ and Z¹⁵ each represent a substituent not changing in sol-gel reaction, or a hydrogen atom; n13 and n15 each indicate an integer of from 1 to 8; n14 indicates an integer of from 0 to 4; n16 indicate an integer of from 1 to 5; Y¹⁴ represents a polymerizing group that may form a carbon-carbon bond or a carbon-oxygen bond through polymerization;

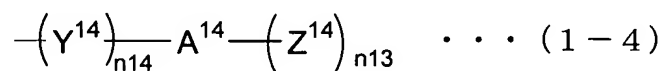
L¹⁵ represents a linking group; E¹⁵ represents an alkyleneoxy group, an alkylene group or a siloxy group; when n₁₃ or n₁₅ is 2 or more, then Z¹⁴'s or Z¹⁵'s may be the same or different.

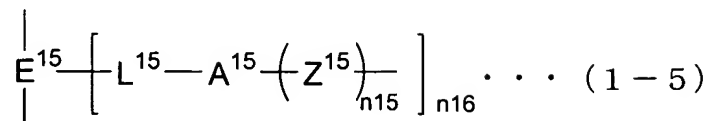
12. (Original) An organic-inorganic hybrid proton-conductive material containing a organic-inorganic hybrid material and a proton source which imparts proton conductivity into the organic-inorganic hybrid material, and wherein the organic-inorganic hybrid material is produced by crosslinking a precursor that is an organosilicon compound having a mesogen group.

13. (Withdrawn) The organic-inorganic hybrid proton-conductive material of claim 12, wherein the organic-inorganic hybrid material is produced by three-dimensionally crosslinking the precursor.

14. (Withdrawn) The organic-inorganic hybrid proton-conductive material of claim 12, wherein the proton source is at least one selected from the group consisting of phosphorus compounds, organic sulfonic acids and perfluorocarbonsulfonic acid polymers.

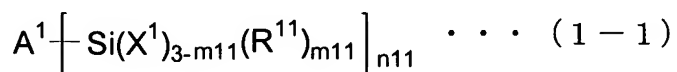
15. (Withdrawn) The organic-inorganic hybrid proton-conductive material of claim 12, the organic-inorganic hybrid material further comprises at least one compound of the following formulae (1-4) and (1-5), and wherein the amount of the at least one compound is in range of from 1 mol% to 50 mol% relative to the precursor:





wherein, in formulae (1-4) and (1-5), A¹⁴ and A¹⁵ each represent an organic atomic group that contains a mesogen and an alkylene group having at least 4 carbon atoms; Z¹⁴ and Z¹⁵ each represent a substituent not changing in sol-gel reaction, or a hydrogen atom; n13 and n15 each indicate an integer of from 1 to 8; n14 indicates an integer of from 0 to 4; n16 indicate an integer of from 1 to 5; Y¹⁴ represents a polymerizing group that may form a carbon-carbon bond or a carbon-oxygen bond through polymerization; L¹⁵ represents a linking group; E¹⁵ represents an alkyleneoxy group, an alkylene group or a siloxy group; when n13 or n15 is 2 or more, then Z¹⁴'s or Z¹⁵'s may be the same or different.

16. (Original) The organic-inorganic hybrid proton-conductive material of claim 12, the organic-inorganic hybrid material is produced by polymerizing a compound of the following formula (1-1):

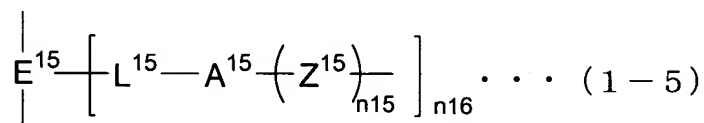
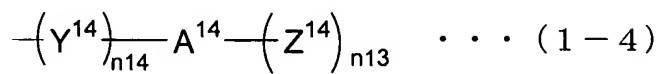


wherein A¹ represents an organic atomic group that contains a mesogen group and an alkylene group having at least 4 carbon atoms; R¹¹ represents an alkyl group, an aryl group or a heterocyclic group; X¹ represents a halogen atom or OR¹⁴; R¹⁴ represents a hydrogen atom, an alkyl group, an aryl group or a silyl group; m11 indicates an integer of from 0 to 2; n11 indicates an integer of from 1 to 10; when m11 or 3-m11 is 2 or more, then R¹¹'s or X¹'s may be the same or different.

17. (Original) The organic-inorganic hybrid proton-conductive material of claim 16, wherein the proton source is at least one selected from the group consisting of

phosphorus compounds, organic sulfonic acids and perfluorocarbonsulfonic acid polymers.

18. (Withdrawn) The organic-inorganic hybrid proton-conductive material of claim 16, wherein the organic-inorganic hybrid material further comprises at least one compound of the following formulae (1-4) and (1-5), and wherein the amount of the at least one compound is in range of from 1 mol% to 50 mol% relative to the precursor:

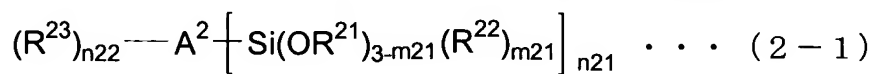


wherein, in formulae (1-4) and (1-5), A¹⁴ and A¹⁵ each represent an organic atomic group that contains a mesogen and an alkylene group having at least 4 carbon atoms; Z¹⁴ and Z¹⁵ each represent a substituent not changing in sol-gel reaction, or a hydrogen atom; n13 and n15 each indicate an integer of from 1 to 8; n14 indicates an integer of from 0 to 4; n16 indicate an integer of from 1 to 5; Y¹⁴ represents a polymerizing group that may form a carbon-carbon bond or a carbon-oxygen bond through polymerization; L¹⁵ represents a linking group; E¹⁵ represents an alkyleneoxy group, an alkylene group or a siloxy group; when n13 or n15 is 2 or more, then Z¹⁴'s or Z¹⁵'s may be the same or different.

19. (Withdrawn) The organic-inorganic hybrid proton-conductive material of claim 11, wherein the organic-inorganic hybrid material is produced by three-dimensionally crosslinking a precursor that is an organosilicon compound that has an alkoxysilyl

group, a mesogen group and a substituent group capable of forming a carbon-carbon bond or a carbon-oxygen bond through polymerization.

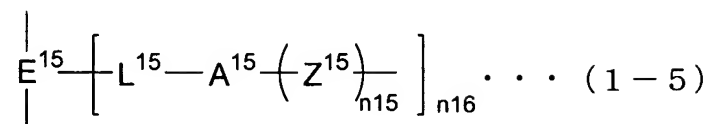
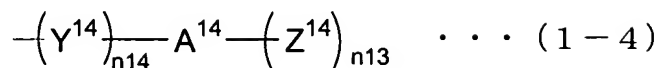
20. (Withdrawn) The organic-inorganic hybrid proton-conductive material of claim 19, wherein the organic-inorganic hybrid material is produced through sol-gel reaction of a precursor that is an organosilicon compound of the following formula (2-1) to form an Si-O-Si bond, combined with polymerization of the substituent in the organosilicon compound to form a carbon-carbon bond or a carbon-oxygen bond:



wherein A^2 represents an organic atomic group containing a mesogen group; R^{21} represents an alkyl group; R^{22} represents an alkyl group, an aryl group or a heterocyclic group; R^{23} represents a substituent group capable of forming a carbon-carbon bond or a carbon-oxygen bond through polymerization; m21 indicates an integer of from 0 to 2; n21 indicates an integer of from 1 to 10; n22 indicates an integer of from 1 to 5; when 3-m21 or m21 is 2 or more, then R^{21} 's or R^{22} 's may be the same or different; when n22 is 2 or more, then R^{23} 's may be the same or different.

21. (Withdrawn) The organic-inorganic hybrid proton-conductive material of claim 20, wherein the proton source is at least one selected from the group consisting of phosphorus compounds, organic sulfonic acids and perfluorocarbonsulfonic acid polymers.

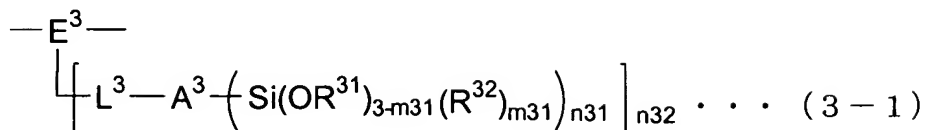
22. (Withdrawn) The organic-inorganic hybrid proton-conductive material of claim 20, wherein the organic-inorganic hybrid material further comprises at least one compound of the following formulae (1-4) and (1-5), and wherein the amount of the at least one compound is in range of from 1 mol% to 50 mol% relative to the precursor:



wherein, in formulae (1-4) and (1-5), A^{14} and A^{15} each represent an organic atomic group that contains a mesogen and an alkylene group having at least 4 carbon atoms; Z^{14} and Z^{15} each represent a substituent not changing in sol-gel reaction, or a hydrogen atom; $n13$ and $n15$ each indicate an integer of from 1 to 8; $n14$ indicates an integer of from 0 to 4; $n16$ indicate an integer of from 1 to 5; Y^{14} represents a polymerizing group that may form a carbon-carbon bond or a carbon-oxygen bond through polymerization; L^{15} represents a linking group; E^{15} represents an alkyleneoxy group, an alkylene group or a siloxy group; when $n13$ or $n15$ is 2 or more, then Z^{14} 's or Z^{15} 's may be the same or different.

23. (Withdrawn)The organic-inorganic hybrid proton-conductive material of claim 12, wherein the organic-inorganic hybrid material is produced through crosslinking polymerization of a precursor that is a polymer having, in the side branches thereof, an atomic group that contains an alkoxysilyl group, a mesogen group and an alkylene group.

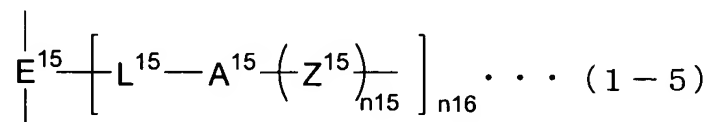
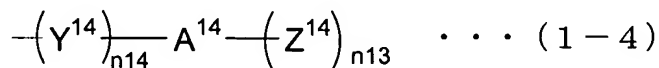
24. (Withdrawn)The organic-inorganic hybrid proton-conductive material of claim 23, wherein the organic-inorganic hybrid material is produced by a precursor is a polymer having a repeating unit of the following formula (3-1):



wherein A³ represents an organic atomic group that contains a mesogen group and an alkylene group; R³¹ represents an alkyl group; R³² represents an alkyl group, an aryl group or a heterocyclic group; E³ represents an alkyleneoxy group, an alkylene group or a siloxy group; L³ represents a linking group; m31 indicates an integer of from 0 to 2; n31 indicates an integer of from 1 to 10; n32 indicates an integer of from 1 to 5; when 3-m31 or m31 is 2 or more, then R³¹'s or R³²'s may be the same or different.

25. (Withdrawn)The organic-inorganic hybrid proton-conductive material of claim 24, wherein the proton source is at least one selected from the group consisting of phosphorus compounds, organic sulfonic acids and perfluorocarbonsulfonic acid polymers.

26. (Withdrawn)The organic-inorganic hybrid proton-conductive material of claim 24, wherein the organic-inorganic hybrid material further comprises at least one compound of the following formulae (1-4) and (1-5), and wherein the amount of the at least one compound is in range of from 1 mol% to 50 mol% relative to the precursor:



wherein, in formulae (1-4) and (1-5), A^{14} and A^{15} each represent an organic atomic group that contains a mesogen and an alkylene group having at least 4 carbon atoms; Z^{14} and Z^{15} each represent a substituent not changing in sol-gel reaction, or a hydrogen atom; n_{13} and n_{15} each indicate an integer of from 1 to 8; n_{14} indicates an integer of from 0 to 4; n_{16} indicate an integer of from 1 to 5; Y^{14} represents a polymerizing group that may form a carbon-carbon bond or a carbon-oxygen bond through polymerization; L^{15} represents a linking group; E^{15} represents an alkyleneoxy group, an alkylene group or a siloxy group; when n_{13} or n_{15} is 2 or more, then Z^{14} 's or Z^{15} 's may be the same or different.

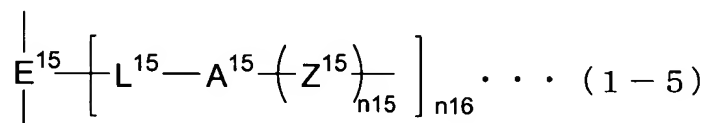
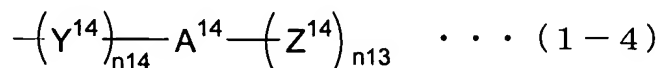
27. (Withdrawn) A fuel cell that comprises an organic-inorganic hybrid proton-conductive material, wherein the organic-inorganic hybrid proton-conductive material containing a organic-inorganic hybrid material and a proton source which imparts proton conductivity into the organic-inorganic hybrid material, and wherein the organic-inorganic hybrid material is produced by crosslinking a precursor that is an organosilicon compound having a mesogen group.

28. (Withdrawn) The fuel cell of claim 27, wherein the organic-inorganic hybrid material is produced by three-dimensionally crosslinking the precursor.

29. (Withdrawn) The organic-inorganic hybrid proton-conductive material of claim 27, wherein the proton source is at least one selected from the group consisting of phosphorus compounds, organic sulfonic acids and perfluorocarbonsulfonic acid polymers.

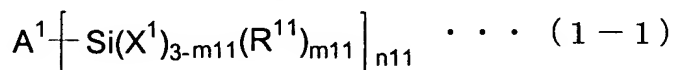
30. (Withdrawn) The organic-inorganic hybrid proton-conductive material of claim 27, wherein the organic-inorganic hybrid material further comprises at least one

compound of the following formulae (1-4) and (1-5), and the amount of the at least one compound is in range of from 1 mol% to 50 mol% relative to the precursor:



wherein, in formulae (1-4) and (1-5), A^{14} and A^{15} each represent an organic atomic group that contains a mesogen and an alkylene group having at least 4 carbon atoms; Z^{14} and Z^{15} each represent a substituent not changing in sol-gel reaction, or a hydrogen atom; $n13$ and $n15$ each indicate an integer of from 1 to 8; $n14$ indicates an integer of from 0 to 4; $n16$ indicate an integer of from 1 to 5; Y^{14} represents a polymerizing group that may form a carbon-carbon bond or a carbon-oxygen bond through polymerization; L^{15} represents a linking group; E^{15} represents an alkyleneoxy group, an alkylene group or a siloxy group; when $n13$ or $n15$ is 2 or more, then Z^{14} 's or Z^{15} 's may be the same or different.

31. (Withdrawn) The organic-inorganic hybrid proton-conductive material of claim 27, wherein the organic-inorganic hybrid material is produced by polymerizing a compound of the following formula (1-1):

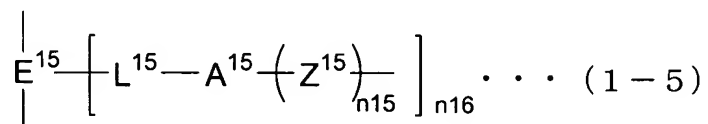
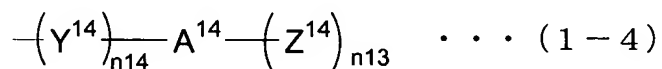


wherein A^1 represents an organic atomic group that contains a mesogen group and an alkylene group having at least 4 carbon atoms; R^{11} represents an alkyl group, an aryl group or a heterocyclic group; X^1 represents a halogen atom or OR^{14} ; R^{14} represents a hydrogen atom, an alkyl group, an aryl group or a silyl group; $m11$ indicates an integer

of from 0 to 2; n₁₁ indicates an integer of from 1 to 10; when m₁₁ or 3-m₁₁ is 2 or more, then R¹¹'s or X¹'s may be the same or different.

32. (Withdrawn) The organic-inorganic hybrid proton-conductive material of claim 31, wherein the proton source is at least one selected from the group consisting of phosphorus compounds, organic sulfonic acids and perfluorocarbonsulfonic acid polymers.

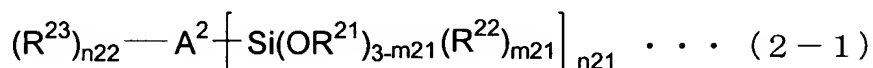
33. (Withdrawn) The organic-inorganic hybrid proton-conductive material of claim 31, wherein the organic-inorganic hybrid material further comprises at least one compound of the following formulae (1-4) and (1-5), and wherein the amount of the at least one compound is in range of from 1 mol% to 50 mol% relative to the precursor:



wherein, in formulae (1-4) and (1-5), A¹⁴ and A¹⁵ each represent an organic atomic group that contains a mesogen and an alkylene group having at least 4 carbon atoms; Z¹⁴ and Z¹⁵ each represent a substituent not changing in sol-gel reaction, or a hydrogen atom; n₁₃ and n₁₅ each indicate an integer of from 1 to 8; n₁₄ indicates an integer of from 0 to 4; n₁₆ indicate an integer of from 1 to 5; Y¹⁴ represents a polymerizing group that may form a carbon-carbon bond or a carbon-oxygen bond through polymerization; L¹⁵ represents a linking group; E¹⁵ represents an alkyleneoxy group, an alkylene group or a siloxy group; when n₁₃ or n₁₅ is 2 or more, then Z¹⁴'s or Z¹⁵'s may be the same or different.

34. (Withdrawn) The organic-inorganic hybrid proton-conductive material of claim 27, wherein the organic-inorganic hybrid material is produced by three-dimensionally crosslinking a precursor that is an organosilicon compound that has an alkoxysilyl group, a mesogen group and a substituent group capable of forming a carbon-carbon bond or a carbon-oxygen bond through polymerization.

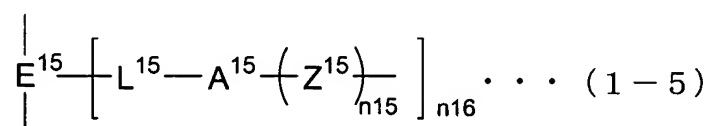
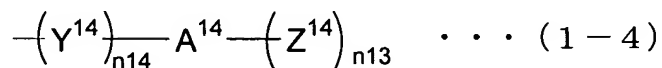
35. (Withdrawn) The organic-inorganic hybrid proton-conductive material of claim 34, wherein the organic-inorganic hybrid material is produced through sol-gel reaction of a precursor that is an organosilicon compound of the following formula (2-1) to form an Si-O-Si bond, combined with polymerization of the substituent in the organosilicon compound to form a carbon-carbon bond or a carbon-oxygen bond:



wherein A^2 represents an organic atomic group containing a mesogen group; R^{21} represents an alkyl group; R^{22} represents an alkyl group, an aryl group or a heterocyclic group; R^{23} represents a substituent group capable of forming a carbon-carbon bond or a carbon-oxygen bond through polymerization; m21 indicates an integer of from 0 to 2; n21 indicates an integer of from 1 to 10; n22 indicates an integer of from 1 to 5; when 3-m21 or m21 is 2 or more, then R^{21} 's or R^{22} 's may be the same or different; when n22 is 2 or more, then R^{23} 's may be the same or different.

36. (Withdrawn) The organic-inorganic hybrid proton-conductive material of claim 35, wherein the proton source is at least one selected from the group consisting of phosphorus compounds, organic sulfonic acids and perfluorocarbonsulfonic acid polymers.

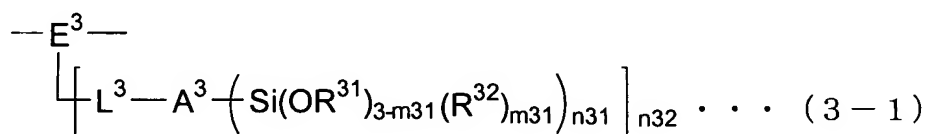
37. (Withdrawn) The organic-inorganic hybrid proton-conductive material of claim 35, wherein the organic-inorganic hybrid material further comprises at least one compound of the following formulae (1-4) and (1-5), and wherein the amount of the at least one compound is in range of from 1 mol% to 50 mol% relative to the precursor:



wherein, in formulae (1-4) and (1-5), A^{14} and A^{15} each represent an organic atomic group that contains a mesogen and an alkylene group having at least 4 carbon atoms; Z^{14} and Z^{15} each represent a substituent not changing in sol-gel reaction, or a hydrogen atom; $n13$ and $n15$ each indicate an integer of from 1 to 8; $n14$ indicates an integer of from 0 to 4; $n16$ indicate an integer of from 1 to 5; Y^{14} represents a polymerizing group that may form a carbon-carbon bond or a carbon-oxygen bond through polymerization; L^{15} represents a linking group; E^{15} represents an alkyleneoxy group, an alkylene group or a siloxy group; when $n13$ or $n15$ is 2 or more, then Z^{14} 's or Z^{15} 's may be the same or different.

38. (Withdrawn) The organic-inorganic hybrid proton-conductive material of claim 27, wherein the organic-inorganic hybrid material is produced through crosslinking polymerization of a precursor that is a polymer having, in the side branches thereof, an atomic group that contains an alkoxysilyl group, a mesogen group and an alkylene group.

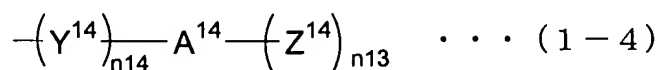
39. (Withdrawn) The organic-inorganic hybrid proton-conductive material of claim 38, wherein the organic-inorganic hybrid material is produced by a precursor is a polymer having a repeating unit of the following formula (3-1):

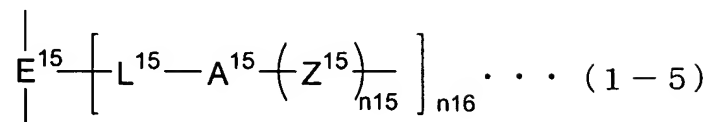


wherein A³ represents an organic atomic group that contains a mesogen group and an alkylene group; R³¹ represents an alkyl group; R³² represents an alkyl group, an aryl group or a heterocyclic group; E³ represents an alkyleneoxy group, an alkylene group or a siloxy group; L³ represents a linking group; m31 indicates an integer of from 0 to 2; n31 indicates an integer of from 1 to 10; n32 indicates an integer of from 1 to 5; when 3-m31 or m31 is 2 or more, then R³¹'s or R³²'s may be the same or different.

40. (Withdrawn) The organic-inorganic hybrid proton-conductive material of claim 39, wherein the proton source is at least one selected from the group consisting of phosphorus compounds, organic sulfonic acids and perfluorocarbonsulfonic acid polymers.

41. (Withdrawn) The organic-inorganic hybrid proton-conductive material of claim 39, wherein the organic-inorganic hybrid material further comprises at least one compound of the following formula (1-4) and (1-5), and the amount of the at least one compound is in range of from 1 mol% to 50 mol% relative to the precursor:





wherein in formulae (1-4) and (1-5), A¹⁴ and A¹⁵ each represent an organic atomic group that contains a mesogen and an alkylene group having at least 4 carbon atoms; Z¹⁴ and Z¹⁵ each represent a substituent not changing in sol-gel reaction, or a hydrogen atom; n13 and n15 each indicate an integer of from 1 to 8; n14 indicates an integer of from 0 to 4; n16 indicate an integer of from 1 to 5; Y¹⁴ represents a polymerizing group that may form a carbon-carbon bond or a carbon-oxygen bond through polymerization; L¹⁵ represents a linking group; E¹⁵ represents an alkyleneoxy group, an alkylene group or a siloxy group; when n13 or n15 is 2 or more, then Z¹⁴'s or Z¹⁵'s may be the same or different.